

REMARKS

In the Office Action, the Examiner objected to the drawings, required that Figure 1 be labeled as prior art, rejected claims 1 and 3 - 9 as anticipated by Bowman et al., and rejected claims 1 - 6, 9 16 as anticipated by Farrington et al., rejected claims 7 and 8 as obvious over Farrington in view of Bowman.

Drawing Objection

Figure 1 has been amended to add the label "prior art" as recommended by the Examiner. Please see the attached Submittal of Formal Drawing.

35 U.S.C. §§102(b) and 103

The present invention provides damping of the ringing which may occur in the secondary output circuit by addition of a small resistance at the control lead (in the case of a FET, the gate lead) of the clamp transistor. No cited reference, whether considered alone or in combination, teaches such an improvement over the prior art. As such, the present invention is not anticipated and is a non-obvious improvement over the prior art.

The present invention is further distinguished over the prior art by connecting the clamp transistors to the same secondary winding of the transformer that supplies the load for the circuit. In the prior art teaching, as embodied in the Bowman reference, a separate secondary winding is necessary for the clamp elements from that used to supply the load to alternately energize the synchronous rectifier switches. According to column 2, lines 23 - 25, of Bowman, the separate drive winding is necessary to ensure adequate drive voltage. The reference of **Farrington** et al. fails to disclose these features nor even suggest such a

modification. The present invention, therefore provides a further non-obvious step over the prior art.

The claims have been amended to distinguish the present invention over the art. The claim amendments are fully supported by the application as filed; in particular, see Figure 3 for an example of the damping resistors.

Conclusion

Each issue raised in the action has been addressed. Early favorable reconsideration and allowance is hereby requested.

Respectfully submitted,



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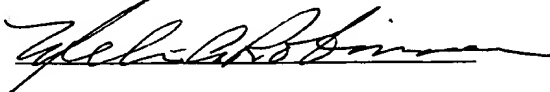
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VERSION MARKED TO SHOW CHANGES

The claims have been amended as indicated below by the markings:

1.(Twice Amended) A rectifier, comprising:

a reference primary circuit;

a transformer having a primary side connected to said reference primary circuit and having a secondary side;

first and second rectifiers in synchronous connection at said secondary side, said first and second rectifiers each having at least three leads, one of said three leads being a control lead;

first and second clamping transistors, said first clamping transistor being connected between said control lead of said first rectifier and said secondary side, said second clamping transistor being connected between said control lead of said second rectifier and said secondary side;

a first damping resistor connected to a control lead of said first clamping transistor and a second damping resistor connected to a control lead of said second clamping transistor;

a load connected to a same winding of said secondary side as said first and second clamping transistors; and

a fixed voltage source connected to said first and second damping resistors to supply a fixed voltage to said control leads of said first and second transistors.

3.(Amended) A rectifier as claimed in claim 1, wherein said first and second rectifiers and said first and second clamping transistors are field effect transistors and said control leads are gate leads.

11.(Twice Amended) A self-driven synchronous rectifier, comprising:

- a transformer having a primary and seconding winding;
- an input for an input voltage connected to said primary winding;
- a pair of rectifiers connected in a synchronous connection,
 - a first rectifier of said pair of rectifiers including a source drain connection in series with a first lead of said secondary winding and a gate connected to a second lead of said secondary winding;
 - a second rectifier of said pair of rectifiers having a source and drain leads connected across said first and second leads of said secondary winding and a gate connected to said first lead of said secondary winding;
- a first transistor connected between said gate of said first rectifier and said second lead of said secondary winding;
- a first damping resistor connected to a control lead of said first transistor;
- a second transistor connected between said gate of said second rectifier and said first lead of said secondary winding;
- a second damping resistor connected to a control lead of said second transistor;

a load connected to said secondary winding of said transformer; and

a voltage source connected to said first and second damping resistors to supply a voltage
through said damping resistors to control leads [gates] of said first and second
transistors.

15.(Amended) A synchronous rectifier as claimed in Claim 11, wherein said first and
second transistors are field effect transistors and said control leads are gate leads.

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